=> d his

(FILE 'HOME' ENTERED AT 14:22:34 ON 27 FEB 2006)
FILE 'CA' ENTERED AT 14:22:46 ON 27 FEB 2006
L1 12465 S COLUMN(5A)(COAT? OR STATIONARY)
L2 266 S L1 AND(SOL OR SOLGEL)
L3 2678 S L1(5A)CAPILLARY
L4 1419 S L3 AND(GLASS OR SILICA? OR QUARTZ)
L5 560 S L4 AND(POLY? OR ORGANIC(A)INORGANIC OR SILOX?)
L6 66 S L5 AND DEACTIV?
L7 144 S L5 AND(STABIL? OR STABL? OR NONEXTRACT?)
L8 114 S L5 AND(CROSS? OR STATIC)
L9 99 S L5 AND (NEW TECHNI? OR POLAR OR L2)
L10 50 S L5 AND (TREATMENT OR TREATING OR INORGAN?)
L11 57 S L2 AND L3
L12 92 S L1 AND(SOL OR SOLGEL)/TI,IT,ST
L13 392 S L6-12
L14 297 S L13 NOT PY>1998
L15 8 S L13 NOT L14 AND PATENT/DT AND PY<2002
L16 290 S L14 NOT(POLYSAC? OR RADIATION OR MICROPOLLUT?)
L17 263 S L16 NOT(WET AIR OR (WATER OR FAT)(W)(SOLUBLE OR SOL))
L18 271 S L15,L17

=> d bib,ab l18 1-271

L18 ANSWER 6 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 131:27254 CA
TI Separation column containing porous matrix and method of packing column
IN Zare, Richard N.; Dulay, Maria T.; Kulkarni, Rajan P.
PA The Board of Trustees of the Leland Stanford Junior University, USA
SO PCT Int. Appl., 26 pp.
PI WO 9930147 A1 19990617 WO 1998-US26004 19981208
US 6136187 A 20001024 US 1997-987287 19971209
PRAI US 1997-987287 A 19971209
AB A mixt. of chromatog. particles and a soln. of water, alc. and metal alkoxide may be injected by a syringe into a capillary column as a gel. The volatile components in the gel are evapd. by heating and gas pressure redn. to form a porous **sol**-gel **glass** matrix attached to the inner wall of the sepn. channel. The pores are large enough for the passage of protons, neutral and ionic species but are too small to permit significant leaching of the chromatog. particles. The sepn. column so formed requires no frits to maintain the **glass** matrix in place in the column. Elec. p.d. and/or pressure difference may be applied to cause fluid flow in the sepn. column to cause electrophoretic and chromatog. sepn.

L18 ANSWER 22 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 127:343478 CA
TI Capillary zone electrophoretic separation of basic proteins with **coated columns** prepared by **Sol**-Gel technology
AU Li, Fang; Jin, Hui; Fu, Ruo Nong; Gu, Jun Ling; Lu, Guang Ju
CS Department of Chemical Engineering & Materials Science, Beijing Institute of Technology, Beijing, 100081, Peop. Rep. China
SO Chinese Chemical Letters (1997), 8(9), 793-796

AB **Coated capillary columns** were prepd. by **sol**-gel technol. and used in the sepn. of basic proteins with capillary zone electrophoresis. The results indicated that a significant decrease in protein adsorption was obtained and EOF was also diminished to zero in the pH range of 3-10.

L18 ANSWER 27 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 127:156010 CA
TI **Sol**-gel-derived fluorinated stationary phase for open tubular electrochromatography
AU Narang, Purnima; Colon, Luis A.
CS Department of Chemistry, Natural Science and Mathematics Complex, State University of New York at Buffalo, Buffalo, NY, 14260-3000, USA
SO Journal of Chromatography, A (1997), 773(1 + 2), 65-72
AB The authors report on the prepn. of a sol-gel-derived fluorinated stationary phase using a 13 μm I.D. fused-SiO2 capillary for open tubular electrochromatog. (OTEC). The sol-gel-derived fluorinated column was prepd. by hydrolyzing a mixt. of tetraethoxysilane (TEOS) and tridecafluoro-1,1,2,2-tetrahydrooctyl-1-triethoxysilane (F13-TEOS) followed by coating a thin film onto the inner walls of a fused-SiO2 capillary. The retention characteristics of the sol-gel-derived fluorinated column are compared with a sol-gel-derived octylhydrocarbonaceous (C8) column. Using the sol-gel-derived fluorinated column, the authors report on the successful sepn. of six model fluorinated org. compds. which cannot be sepd. using the C8 column prepd. either via sol-gel method or by conventional methods. The authors achieved high efficiencies of 100000-300000 plates/m for the various model fluorinated compds. using the sol-gel-derived fluorinated column. The authors have also studied the sepn. performance of the sol-gel-derived fluorinated column using different TEOS:F13-TEOS ratios and the optimum reaction time before **column coating**. Optimum selectivity was obtained with a TEOS:F13-TEOS molar ratio of 1:2 reacted for 24 h prior to **column coating**.

L18 ANSWER 34 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 125:211400 CA
TI **Polyvinyl** alcohol (PVA) based covalently bonded **stable** hydrophilic coating for capillary electrophoresis
IN Karger, Barry L.; Goetzinger, Wolfgang
PA Northeastern University, USA
SO PCT Int. Appl., 39 pp.

PI	**WO 9623220**	**A1**	**19960801**	**WO 1996-US851**	**19960125**
	US 2001007701	**A1**	**20010712**	**US 1998-197896**	**19981123**
	US 6372353	B2	20020416		
PRAI	US 1995-379834	A	19950127		

AB A coated microcapillary column for high performance electrophoresis is disclosed. A preferred microcapillary includes a fused **silica** column, the inner surface of the column having an interconnected **polymeric** coating of a **polyvinyl** alc., (PVA), based **polymer** attached to the column wall by Si-O-Si bonds. The resulting microcapillary column has good hydrolytic and pH **stability** and minimizes electroosmotic flow and interactions between sample components and the capillary wall. Also disclosed are a method of forming a **polymeric** coating layer for any surface by **polymg**. the appropriate org. compds. in an org. solvent and a

method of forming a column with a hydrophilic **polymeric** coating by directly converting an attached hydrophobic coating material to a hydrophilic coating material.

αβχL18 ANSWER 44 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 123:159778 CA
TI A Stationary Phase for Open Tubular Liquid Chromatography and Electrochromatography Using **Sol**-Gel Technology
AU Guo, Yong; Colon, Luis A.
CS Department of Chemistry, State University of New York, Buffalo, NY, 14260-3000, USA
SO Analytical Chemistry (1995), 67(15), 2511-16
AB An **org.-inorg.** hybrid material was fabricated by the **sol**-gel method and cast as a thin **glass** film onto the inner walls of fused **silica** capillary columns. The thin film in the capillaries functioned as the stationary phase for reversed phase open tubular liq. chromatog. (OTLC) and open tubular electrochromatog. (OTEC). The stationary phase provides high surface area and thus an improved phase ratio. Multiple prepn. steps are avoided by attaching the stationary phase and increasing the surface area in a single procedure. By adjusting the ratio of the monomeric precursors in the original **sol**-gel soln., the retentive characteristics of the stationary phase are controlled. This new approach facilitates column prepn. for OTLC and OTEC. Capillary columns prepd. in this manner showed retention characteristics superior to conventionally prepd. ones. **Polycyclic** arom. hydrocarbons were used to evaluate the stationary phase; under the exptl. conditions used, efficiencies of 204,000-285,000 and 280,000-500,000 plates/m were obsd. in OTLC and OTEC, resp. The **sol**-gel-derived stationary phase is **stable** under acidic and basic conditions.

L18 ANSWER 61 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 119:261766 CA
TI Narrow (5-50-μm i.d.) open tubular columns in liquid chromatography using immobilized **polymethylocatdecylsiloxane** as stationary phase
AU Goehlin, Karin; Larsson, Marita
CS Dep. Anal. Mar. Chem., Chalmers Univ. Technol., Goeteborg, S-412 96, Swed.
SO Journal of Microcolumn Separations (1991), 3(6), 547-56
AB This paper presents in detail the prepn. of highly efficient, **stable** open tubular (OT) columns for reversed-phase liq. chromatog. Chromatog. properties of 5-50-μm internal diam. fused SiO2 columns (1.5-5 m in length) are described, and details of the coating procedure are discussed. On-column fluorescence detection was used for the model substituted-anthracene test solutes. Gas chromatog. was used as a complementary technique for column characterization. The stationary phase studied, immobilized **polymethyloctadecylsiloxane**, PMSC18, was chosen because of its more lipophilic character compared to other **siloxanes**. As expected, a higher retention power was found compared to **polydimethylsiloxane** coatings. The **polymeric** stationary phase showed good properties. More than 900,000 plates were achieved in 25 min (k = 0.1) in a 5-μm internal diam. fused SiO2 OT column. The stationary phase contribution to band broadening was <10% in an 11-μm internal

diam. column at a flow rate thirty times Uopt (k = 1.3).

L18 ANSWER 73 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 117:225487 CA
TI Preparation and characteristics of two new GC stationary phases-dihydroxy crown ether containing **polysiloxane**
AU Zeng, Z. R.; Wu, C. Y.; Yan, H.; Huang, Z. F.; Wang, Y. T.
CS Dep. Chem., Wuhan Univ., Wuhan, 430072, Peop. Rep. China
SO Chromatographia (1992), 34(1-2), 85-90
AB Two new kinds of crown ethers: 3,5-dibutyl-unsymmetry-dibenzo-14-crown-4-dihydroxy (cis-, and trans-) with the OH-terminal silicone oil in different proportion were **coated** on **glass capillary columns**, and immobilized by condensation using a coupling agent of alkyltrimethoxysilane. Chromatog. characteristics, including column efficiency, polarity, selectivity, phase transition temp. and thermal **stability** were studied. The columns were compared with PEG-20M in terms of polarity and selectivity. The immobilization and retention mechanisms are also discussed.

L18 ANSWER 86 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 116:5882 CA
TI The preparation and testing of a fused-**silica** gas chromatography capillary column: an experiment for a senior undergraduate laboratory module
AU Kominar, R. John
CS Wilfrid Laurier Univ., Waterloo, ON, N2L 3C5, Can.
SO Journal of Chemical Education (1991), 68(10), A249-A255
AB A lab. expt. is described in the prepn. and testing of a fused-**silica** GC capillary column. A simple procedure is presented that allows coating, immobilizing, conditioning, and testing of a capillary column that can be completed in 2-3 lab. periods. A simplified dynamic coating method is used that allows both **deactivation** and coating of a fused-**silica** column in a sample step using silanol-terminated **polydimethylsiloxane**.

L18 ANSWER 106 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 112:245433 CA
TI Manufacture of E-301-**silica sol glass** capillary chromatographic columns
AU Gong, Jiang; Li, Haitao
CS Dep. Chem., Hunan Norm. Univ., Changsha, Peop. Rep. China
SO Hunan Shifan Daxue Ziran Kexue Xuebao (1989), 12(2), 134-8
LA Chinese
AB The high quality **silica** was obtained by heating silicone oil DC 200 and H2(g) in a **quartz** tube at 250-280°C. The **silica sol** was prepd. by dissolving the **silica** in CH2Cl2. A **capillary column** was prepd. by dynamic **coating** of a **capillary** with 6% E 301-1% **silica sol**. The column is inert, thermal **stable**, with high efficiency, and feasible for sepn. of **polar** and nonpolar compds.

L18 ANSWER 117 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 112:90928 CA
TI Interface adsorption and reproducibility of retention indexes in **glass capillary columns** with dimethylpolysiloxane **stationary** phases **cross**-linked by γ-irradiation

AU Farkas, Pavel; Sojak, Ladislav; Kovac, Milan; Janak, Jaroslav
CS Food Res. Inst., Bratislava, 825 09, Czech.
SO Journal of Chromatography (1989), 471, 251-61
AB The influence of the interphase adsorption on the retention of **polar** and nonpolar analytes analyzed in **glass** capillary columns with the non-**cross**-linked and γ-irradiated **cross**-linked OV-1 stationary phase has been studied. The sepn. systems are characterized by a low-contribution of adsorption to the retention of **polar** analytes, which is for film thicknesses above 0.3 μm less than 0.3% and upon **crosslinking** the stationary phase decrease further by 10-90% of this value. This enables high reproducibility of retention indexes of the substances analyzed. The invariant retention indexes of **polar** analytes in systems with both types of OV-1 stationary phases correspond to 0.4 i.u.

L18 ANSWER 122 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 111:202660 CA
TI Performance of porous **silica** layers in open-tubular columns for liquid chromatography
AU Tock, P. P. H.; Boshoven, C.; Poppe, H.; Kraak, J. C.; Unger, K. K.
CS Lab. Anal. Chem., Univ. Amsterdam, Amsterdam, 1018 WV, Neth.
SO Journal of Chromatography (1989), 477(1), 95-106
AB Progress has been made in the prepn. of porous **silica** layers in fused-**silica** capillaries for open-tubular liq. chromatog. The porous **silica** layer is prepd. by **static** coating of the **silica** precursor, **polyethoxysiloxane** (PES), followed by converting the PES film into a porous **silica** layer with NH4OH soln. The porous **silica** layer can be modified easily by silane reagents commonly used in packed column high-performance liq. chromatog. The performance of the **silica** layer with the different phase systems was tested with **polyarom**. hydrocarbons and derivatized amino acids as samples.

L18 ANSWER 157 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 106:168152 CA
TI Preparation of inert **glass capillary columns coated** with UCON 50 HB-5100. An attempt to rediscover industrially produced α,ω-**polyethylene/polypropylene** glycol ethers as stationary phases in capillary gas chromatography
AU Blum, W.
CS Zent. Funkt. Forsch., CIBA-GEIGY A.-G., Basel, 4002, Switz.
SO HRC & CC, Journal of High Resolution Chromatography and Chromatography Communications (1987), 10(1), 32-8
AB By using UCON 50 HB-5100, one of the most successful stationary phases in capillary gas chromatog. during the past decade, as an example, the attention to the excellent properties of the **polyethylene/polypropylene glycol** ether copolymer coatings is redirected. Based on experience gained in work with OH-terminated **polysiloxanes**, a method is described for prepg. inert and relatively temp. **stable** chem. bonded and **crosslinked** coatings in a single working step. Methyltrimethoxylsilane was used as coupling agent, and CF3COOH was introduced as an acidic catalyst. The reaction mechanisms involved as well as the influence of addnl. **crosslinking** on the column behavior are discussed, particularly with respect of the inertness of the coatings.

L18 ANSWER 183 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 102:209846 CA
TI Preparation and evaluation of capillary columns with phases with 5-33% phenyl substitution
AU Ahnoff, M.; Johansson, L.
CS Dep. Anal. Chem., AB Haessle, Moelndal, S-431 83, Swed.
SO Chromatographia (1984), 19, 151-4
AB A **polysiloxane** with 33% Ph substitution, OV-61, and mixts. of this phase and SE-54 were coated on **deactivated** fused **silica** or borosilicate **glass** capillaries, using diphenyltetramethyldisilazene (DPTMDS) for high temp. silylation. Film **stability** was achieved also without **crosslinking** agents such as azo-tert-butane, thus avoiding the activity introduced by such **treatment**. Columns were **stable** up to 350°.

L18 ANSWER 201 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 100:198229 CA
TI Role of surface groups in affecting the chromatographic performance of certain types of fused-**silica glass capillary column**. III. The **deactivation** and **coating** of certain specially prepared high-molecular-weight, high-viscosity nonpolar and **polar** stationary phases on untreated fused-**silica** surfaces in a single step
AU Lipsky, S. R.; McMurray, W. J.
CS Sch. Med., Yale Univ., New Haven, CT, 06510, USA
SO Journal of Chromatography (1984), 289, 129-42
AB High-mol.-wt., high-viscosity, non-**polar**, silanol-terminated **polydimethylsiloxane polymers** with and without Ph substitution when applied in a single step to untreated fused-**silica glass** capillary tubing efficiently **deactived** and wetted these surfaces. Upon heating, there is evidence that H bonding occurred between the silanol moieties of **polymer** and those of the fused-**silica** surface. This formed a covalent linkage between the **polymer** and the **glass**. Concomitant condensation of the **polymer** occurs, effecting **crosslinking** of the -Si-O-Si-type. Successful single-step **deactivation** and uniform wetting was also noted with a wide variety of high-mol-wt., high-viscosity, **polar** cyanopropyl silicone **polymers** with vinyl or tolyl groups. In many instances, however difficulties were encountered in the **cross**-linking of these **polymers** in the presence of free radical generators.

L18 ANSWER 236 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 94:135230 CA
TI High-resolution **glass capillary columns** with chemically bonded **stationary** phases: application to the gas chromatographic analysis of sterols and steroids in biological extracts
AU Madani, C.; Chambaz, E. M.
CS Lab. Hormonol., Cent. Hosp. Univ. Grenoble, La tronche, 38700, Fr.
SO Journal of the American Oil Chemists' Society (1981), 58(1), 63-70
AB A new approach was developed for the prepn. of highly **stable glass** capillary columns using irreversible bonding of **polysiloxane polymers** to the **glass** surface. The general procedure involves synthesis of reactive linear **polysiloxanes** from variously (alkyl, aryl) substituted dichlorosilanes through homologous or heterologous **polymn**. under alk.

aq. conditions, and covalent condensation of the **polymers** to a properly prepd. **glass** capillary surface at high temp. The principle was 1st applied to the successful prepn. of apolar gas chromatog. systems (methylpolysiloxanes), then extended to the obtention of **polar** systems (Me = Ph = **polysiloxanes**). The flexibility of the approach is demonstrated by the possibility of obtaining stationary phases of various and controlled polarity (i.e., extent of Ph substitution), tailor-made to a given anal. problem. These gas chromatog. systems appear to be remarkably **stable** both with time and temp. ≤300° and compare favorably to existing systems for their high-resoln. properties. These columns were satisfactorily used in the last years for the anal. of sterols and steroids of biol. origin and most extensively in the study of urinary steroid metabolite in humans under pathol. conditions.

L18 ANSWER 250 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 90:114547 CA
TI In situ synthesis of highly thermostable, non-extractable, methylsilicone gum phases for **glass** capillary gas chromatography
AU Blomberg, Lars; Wannman, Thomas
CS Dep. Anal. Chem., Univ. Stockholm, Stockholm, Swed.
SO Journal of Chromatography (1979), 168(1), 81-8
AB The high thermal **stability** of **crosslinked poly**(methylsiloxane) gums, as compared with linear **polysiloxanes**, makes them esp. suitable as **stationary** phases for **glass capillary columns**. Because such gums have a very limited soly. in commonly used solvents, it is necessary to develop a method for their formation within the column. To further increase the **stability** of the gum films, conditions were chosen which facilitate chem. bonding to the **glass** surface. On temp. programming to 300°, such columns show good efficiency, low bleeding, and good durability. The columns were successfully used for the routine anal. of **polynuclear** arom. hydrocarbons.

L18 ANSWER 252 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 89:173121 CA
TI Use of hydrolyzed chlorosilanes for the preparation of high resolution **glass** capillary columns
AU Madani, C.; Chambaz, E. M.; Rigaud, M.; Chebroux, P.; Breton, J. C.; Berthou, F.
CS Lab. Hormonol., Cent. Hosp. Univ. Grenoble, La Tronche, Fr.
SO Glass Capillary Chromatogr., Int. Symp., 2nd (1977), 249-68. Editor(s): Kaiser, Rudolf E. Publisher: Inst. Chromatogr., Bad Duerkheim, Ger.
AB **Glass capillary columns** previously treated with HCl, were **coated** with a **polysiloxane** (prepd. by alk. hydrolysis of chlorosilane) by a dynamic method. The column was then filled with gaseous NH3, sealed, and heated from 100 to 320° at 1°/min and at 320° for 18 h, to give a **stable**, chem.-bonded stationary phase. The column is easier to prep. than conventional columns and exhibits good resoln., **stability**, and reproducibility. The method is flexible in that **polar** or nonpolar phases can be prepd. depending on the choice of chlorosilane used to prep. the **polysiloxane**. Me2SiCl2, Et2SiCl2, and MePhSiCl2 were subjected to alk. hydrolysis and the resulting **polysiloxanes** were used to prep. the capillary columns. These columns were suitable for gas

chromatog. anal. of steroid metabolites.

L18 ANSWER 257 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 87:148120 CA
TI Use of hydrolyzed chlorosilanes for the preparation of high resolution **glass** capillary columns
AU Madani, C.; Chambaz, E. M.; Rigaud, M.; Chebroux, P.; Breton, J. C.; Berthou, F.
CS Lab. Hormonol., Cent. Hosp. Univ. Grenoble, La Tronche, Fr.
SO Chromatographia (1977), 10(8), 466-72
AB The title procedure involves the prepn. of **polysiloxane polymers** obtained by alk. hydrolysis of alkyl chlorosilane. The mixt. of **polysiloxane polymers** is then coated on the walls of previously HCl-treated **glass** capillary columns by using a dynamic method. A base-catalyzed reaction with gaseous NH3, applied to the coated **polymers** leads to a **stable** chem. bonded stationary phase, with nonpolar characteristics. This type of column is easier to prep. than conventional ones and exhibits excellent chromatog. properties, with regard to resoln. **stability**, and reproducibility. The flexibility of this method permits the use of other types of com. available chlorosilanes (i.e. methylphenyl chlorosilane) to prep. **polar polysiloxane polymers** suitable for anal. of complex biochem. mixts., such as steroid metabolites.

L18 ANSWER 262 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 86:1843 CA
TI New method for the preparation of highly **stable polysiloxane-coated glass** open-tubular **capillary columns** and application to the analysis of hormonal steroids
AU Madani, C.; Chambaz, E. M.; Rigaud, M.; Durand, J.; Chebroux, P.
CS Lab. Hormonol., Cent. Hosp. Univ. Grenoble, La Tronche, Fr.
SO Journal of Chromatography (1976), 126, 161-9
AB In the title procedures, a **siloxane polymeric** mixt. is prepd. 1st by hydrolysis of dimethyldichlorosilane. The **polymer** is then coated onto the previously etched **glass** wall by a base-catalyzed reaction to yield a nonpolar system of high **stability** that shows satisfactory chromatog. properties. This type of column was used for the high-resoln. sepns. of complex hormonal steroid mixts. The flexibility of this method should permit the prepn. of capillary systems with a wide range of polarity.

L18 ANSWER 271 OF 271 CA COPYRIGHT 2006 ACS on STN
AN 58:69716 CA
OREF 58:11933a-b
TI **Sol-coated capillary** adsorption **columns** for gas chromatography
AU Schwartz, R. D.; Brasseaux, D. J.; Shoemake, G. R.
CS Shell Develop. Co., Houston, TX
SO Anal. Chem. (1963), 35, 496-9
AB Capillary adsorption columns are prepd. by wetting the inside of a capillary tube with a colloidal silica **sol** contg. an adsorbent in a volatile liquid (Nalcoag 1022, 22% silica **sol** in aq. iso-PrOH) and then evapg. the liquid. This type of column is particularly suitable for hydrocarbon sepns. utilizing ultra-sensitive detectors, because difficulties due to bleeding of liquid phases are eliminated.

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